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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,197	07/11/2003	Taketo Tsukioka	IPO-P1753	4263
3624	7590	09/12/2007	EXAMINER	
VOLPE AND KOENIG, P.C. UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			SELBY, GEVEL V	
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/618,197	TSUKIOKA, TAKETO	
	Examiner	Art Unit	
	Gevell Selby	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 20 June 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 5-20 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 5-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11 July 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/20/07 have been fully considered but they are not persuasive. The applicant submits the prior art does not disclose the following limitations of the claimed invention:

calculating parameters to be used in a function for estimating one kind of color component from a different kind of color component within the region near the pixel of interest, and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest, as stated in claims 5, 7, 9, 11, and 12. The Examiner respectfully disagrees.

Examiner's Reply:

Re claims 5, 7, 9, 11 and 12) The Kakarala reference discloses calculating parameters (gradients) to be used in a function (see equation 13: the interpolated green component at R₁) for estimating one kind of color component (Green component at R₁) from a different kind of color component (Blue or Red component) within the region near the pixel of interest (see para. 35 and 54), and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest (see para. 62-64 and 88-92: the interpolated green component at R₁ is estimated using the gradients of the neighboring red and blue components). The applicant submits that the present invention differs from the prior art, because the prior art uses all the color components of the neighboring pixels to estimate the missing pixel; however, the claim does not state that only one different color components of the neighboring pixels is used in the estimation. Therefore, the prior art discloses all the

limitations of the claim, since a different color component along with other color components of the neighboring pixels are used to estimate the missing color component of the pixel.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 5-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kakarala et al., US 2003/0052981.**

In regard to claims 5, 9, and 12, Kakarala et al., US 2003/0052981, discloses an image processing device and image processing program comprising:

input circuit (see figure 1, element 20) for inputting an digital image
wherein one or more color components are non-existent in each pixel, obtained from a single-sensor image-pickup system, a double-sensor image-pickup system, or a triple-sensor pixel spatial offset image-pickup system (see para. 29);
combination average calculation circuit (see figure 1, element 40) for making a combination of two or more pixels from a plurality of pixels having the same color component near the pixel of interest within the image signals input from the input means, and calculating the average for the combination of the color

components of two or more pixels for a plurality kinds of combinations of pixels in the region near the pixel of interest (see para. 44);

color correlation calculation circuit (see figure 4, element 42) for calculating parameters (gradients) to be used in a function (see equation 13: the interpolated green component at R₁) for estimating one kind of color component (Green component at R₁) from a different kind of color component (Blue or Red component) within the region near the pixel of interest (see para. 35 and 54), and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest (see para. 62-64 and 88-92: the interpolated green component at R₁ is estimated using the gradients of the neighboring red and blue components); and

combination selection circuit (see figure 4, element 40) for selecting one of the plurality of combination averages calculated by the combination average calculation means, as the non-existent color component for the pixel of interest, based upon the color component estimated by the color correlation calculation processing (see para 74-79).

In regard to claims 6, 10, and 13, Kakarala et al., US 2003/0052981, discloses the image processing device and image processing program according to claims 5, 9, and 12 wherein the combination average calculation means further calculates the fluctuation of the color component within the combination of two or more pixels (see para. 72-73: the fluctuation of the color component in the neighborhood vote data is considered); and

wherein the color correlation calculation circuit further calculates the reliability of the calculated parameters (see para. 66-71: the adaptive interpolation logic 42 or color correlation calculation circuit calculates the reliability of the majority rule of the value of α determined by the Jacobian or calculated parameters using the column vote logic); and

wherein, in the event that the reliability calculated is high, the color correlation calculation circuit selects one of the plurality of combination average calculated by the combination average calculation circuit as the non-existent color component for the pixel of interest, based on the color component estimated by the color correlation calculation circuit (see para. 68-71: when the reliability is high or if the horizontal or vertical interpolated component has the most votes then, the component with the most votes is selected), and

in the event that the reliability is low, the combination selection means selects the combination average corresponding to the combination wherein the fluctuation of the color component calculated by the combination average calculation means is the least, as the non-existent color component (see para. 75-76: less fluctuation in the neighboring pixels, increases the voting wherein the highest weighing is given to the combination with the most votes).

In regard to claims 7, 11, and 14, Kakarala et al., US 2003/0052981, discloses the image processing device and program comprising:

input circuit (see figure 1, element 20) for inputting an digital image
wherein one or more color components are non-existent in each pixel, obtained

from a single-sensor image-pickup system, a double-sensor image-pickup system, or a triple-sensor pixel spatial offset image-pickup system (see para. 29);

first non-existent color component generating circuit (see figure 1, element 40) for making a combination of two or more pixels from a plurality of pixels having the same color component near the pixel of interest within the image signals input from the input means, calculating the average for the combination the color components of two or more pixels for a plurality kinds of combinations in the region near the pixel of interest, and selecting one of the calculated averages so as to generate the non-existent color component (see para. 44);

second non-existent color component generating circuit (see figure 2, element 42 adaptive interpolation logic) calculating parameters (gradients) to be used in a function (see equation 13: the interpolated green component at R₁) for estimating one kind of color component (Green component at R₁) from a different kind of color component (Blue or Red component) within the region near the pixel of interest (see para. 35 and 54), and estimating a color component non-existent in the pixel of interest by said function using the parameters and a color component obtained in the pixel of interest, thereby generating the non-existent color component of the pixel of interest (see para. 62-64 and 88-92: the interpolated green component at R₁ is estimated using the gradients of the neighboring red and blue components).

third non-existent color component generating circuit for calculating the weighted average (α) for the non-existent color component generated by the first

non-existent color generating means and the non-existent color component generated by the second non-existent color component generating circuit, thereby generating the non-existent color component value (see para. 75-76).

In regard to claims 8 and 12, Kakarala et al., US 2003/0052981, discloses the image processing device according to claims 7 and 11, respectively, further comprising region judgment means for making judgment whether or not the region near the pixel of interest is a texture region, and also making judgment whether or not the region near the pixel of interest is an edge region, wherein in the event that judgment is made by the region judgment means that the region is a texture region, the evaluation of the reliability is increased, and conversely in the event that judgment is made that the region is an edge region, the evaluation of the reliability is decreased (see para 70).

In regard to claim 15, Kakarala et al., US 2003/0052981, discloses the image processing device according to claim 14, further comprising weighting region setting means for selecting a pixel set for calculating a weight to be used to calculate the weighted average within the region near the pixel of interest (see para. 76: the weighing region or neighborhood are set to size N and the pixels within that distance around the target pixel with the non-existent color component are selected), wherein the third non-existent color component generating means uses a value calculated based upon a statistical amount of pixel values of the pixel set, as a weight to be used to calculate the weighted average (see para. 75).

In regard to claim 16, Kakarala et al., US 2003/0052981, discloses the image processing device according to claim 15 wherein the weighting region setting means lies

within a region with a predetermined size (N) near the pixel of interest (see para. 76) and comprising a plurality of sub- regions or columns with a size smaller than the predetermined size, and selects a target sub- region from the sub-regions based upon pixel values in the sub-regions, to set a union of pixels contained in the selected sub-region as the pixel set (see para 71 and 72: the region or neighborhood is divided into sub regions or columns to determine the weighing).

In regard to claims 17 and 18, Kakarala et al., US 2003/0052981, discloses the image processing device according to claims 15 and 16, wherein the second non-existent color component generating means calculates approximation parameters based upon pixel values of the pixel set selected by the region setting means (see para 54: the gradients or parameters are calculated for each column or region) .

In regard to claims 19 and 20, Kakarala et al., US 2003/0052981, discloses the image processing device according to claim 15, wherein the statistical amount represents uniformity of the pixel values of the pixel set (see para. 75 and 76: the more uniform the pixel set the higher the weighting).

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gevell Selby whose telephone number is 571-272-7369. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LIN YE
SUPERVISORY PATENT EXAMINER

gvs